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CLAIMS

1. A power distribution/generation system for supplying electrical power to a number of sites, at least some of the sites comprising a generator, at least some of which are Stirling engines capable of generating electrical power, the generators being linked together on a local network, the local network being connectable to an external power grid, and a controller to control the distribution of power so that a site is supplied with electrical power from the local network if its demand exceeds the power generated by that site's generator, and so that power is drawn from the grid if the total power demand of all of the sites exceeds the power generated by all of the generators.

2. A system according to claim 1, wherein the Stirling engine is a linear free piston Stirling engine.

3. A system according to any one of the preceding claims, wherein the controller is arranged to export excess power to the grid if the power generated exceeds the power demand of the local network.

4. A system according to any one of the preceding claims, wherein all of the generators in the local network are routed through a hub which is then connected to the grid.

5. A system according to any one of the preceding claims, further comprising means to detect the absence of mains power, wherein the controller is arranged to operate in the absence of mains power to supply electrical power to selected electricity consuming apparatus.

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6. A system according to claim 5, wherein the controller is arranged, upon detection of the absence of mains power to selectively supply electrical power to certain designated emergency sockets within a site.

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7. A system according to claim 6, further comprising means to detect excess power demand, and to trim the peak voltage supplied to the selected sockets for a predetermined period of time.

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8. A system according to any one of the preceding claims, wherein the cables which carry the power to and from each site are also used as a carrier for the communication signals between the sites.

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9. A system according to any one of the preceding claims, further comprising a power store in communication with at least one of those sites that has a generator, the power store being arranged to receive and store a proportion of the power generated by at least some of the generators with which it communicates for later distribution back to sites within the local network.

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25 10. A system according to claim 9, wherein the controller is further configured to control the distribution of power so that a first site is supplied with electrical power from other generators within the local network, and/or the power store within the local  
30 network, if the demand at the first site exceeds the power generated by the generator at that first site, so that power is drawn from the power store if the total power demand of all of the sites exceeds the power generated by all of the generators, and so that  
35 power is drawn from the grid if the total power demand of all of the sites exceeds the power generated by all of the generators and that power available from the

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power store.

11. The system of claim 9 or claim 10, wherein the power store is selected from the list comprising a  
5 battery, a flywheel, pumped storage and superconducting magnetic storage.

12. A method for supplying electrical power to a number of sites using a system according to any one of  
10 the preceding claims, the method comprising the steps of monitoring the power generated by each generator, monitoring the power demand at each site, and controlling the distribution of power so that a site  
15 is supplied with electrical power from the local network if its demand exceeds the power generated by that site's generator, and drawing power from the grid if the total power demand of all of the sites exceeds the power generated by all of the generators.

20 13. The method of claim 12, further comprising receiving and storing a proportion of the power generated by at least some of the generators; and subsequently distributing the stored power back to the sites within the local network in response to an  
25 increased demand for power.